



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

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Secretary

KENNETH L. KIMMELL  
Commissioner

September 26, 2013

Mr. John Flynn  
Novartis Institute for Biomedical Research  
250 Massachusetts Avenue  
Cambridge, MA 02138

RE: **CAMBRIDGE**  
Transmittal No. X253339  
Application No. NE-13-016  
Class: Synthetic Minor 25  
FMF No. 383411  
**AIR QUALITY PLAN APPROVAL**

Dear Mr. Flynn:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Protection (MassDEP), Bureau of Waste Prevention, has reviewed your Limited Plan Application ("Application") listed above. This application concerns the proposed construction, substantial reconstruction, alteration and/or operation of your research laboratories that are located at 181 and 254 Massachusetts Avenue in Cambridge, Massachusetts ("Facility").

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control," regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Plan Approval.

## **1. DESCRIPTION OF FACILITY AND APPLICATION**

The Permittee proposes to modify its existing Plan Approval, Appl. No. MBR-03-IND-020, dated November 25, 2003, which governs approximately 200 laboratory hoods at the Facility. As part of this Application, the Permittee proposes to construct two additional research buildings, Buildings 608 and 613 to be located at 181 Massachusetts Avenue in Cambridge. These additional research activities will result in an increase in volatile organic emissions (VOC) at this Facility from the current 4.8 to 6.2 tons per year (TPY).

The additional laboratory hoods expected will increase the total number of laboratory hoods to 400, at both the 181 and 254 Massachusetts Avenue locations. The operations at the new hoods are expected to use the same chemicals along with similar laboratory operations, which include high pressure chromatography, histology, separations, glassware cleaning and surface decontamination. The Permittee also holds a Plan Approval Appl. No. MBR-03-IND-001, for research laboratory hoods at 100 Technology Square across the street from its 254 Massachusetts location that remains in operation.

The air emission factors are calculated based on three different laboratory operations: 1) chemicals used in instrumentation; 2) chemicals in surface decontamination; and 3) acetone used in glassware cleaning. A conservative emission factor of 2 percent is applied for chemicals used in instrumentation. An emission factor of 100 percent is applied for chemicals used in surface decontamination, which are ethanol and isopropyl alcohol. Acetone is used for glassware cleaning with a calculated emission rate of 10 percent. The remaining 90 percent is recovered from the glass washer and disposed of properly.

In Buildings 608 and 613, the new laboratory hoods will exhaust through a total of seven laboratory exhaust fans and thirteen roof top air handling units. The existing laboratory stacks at the 254 Massachusetts Avenue site number twelve roof top air handling units.

## **2. EMISSION UNIT (EU) IDENTIFICATION**

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

<b>Table 1</b>			
<b>EU#</b>	<b>Description</b>	<b>Design Capacity</b>	<b>Pollution Control Device (PCD)</b>
EU1	EU1 is operation of research laboratory hoods at the 181 and 254 Massachusetts Avenue, Cambridge sites.	NA	NA

**Table 1 Key:**

EU = Emission Unit

NA = Not Applicable

## **3. APPLICABLE REQUIREMENTS**

### **A. OPERATIONAL, PRODUCTION, AND EMISSION LIMITS**

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2 below:

Table 2				
EU#	Operational/Production Limit	Air Contaminant	Emission Limits	
			Tons per month	Tons per 12 month rolling period
EU1	None	VOC	2.5	6.2
		Acetone	0.4	0.9
		HOC	1.92	4.8
		Acids/Bases	0.4	1.0
		HAPS	1.92	4.8

**Table 2 Key:**

EU# = Emission Unit Number

VOC = volatile organic compounds

HOC = halogenated organic compounds

HAPS = total hazardous air pollutants

## B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

Table 3	
EU#	Monitoring and Testing Requirements
EU1	1) The Permittee shall monitor chemical usage such that compliance with the emission limits contained in Table 2 of this Approval can be determined.
	2) The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	3) If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and Regulation 310 CMR 7.13.

**Table 3 Key:**

EU# = Emission Unit Number

Table 4	
EU#	Recordkeeping Requirements
EU1	1) The Permittee shall maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve month period (current month plus prior eleven months). These records shall be compiled no later than the 15 <sup>th</sup> day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at <a href="http://www.mass.gov/dep/air/approvals/aqforms.htm#report">http://www.mass.gov/dep/air/approvals/aqforms.htm#report</a> .
	2) The Permittee shall maintain records of monitoring and testing as required by Table 3.
	3) The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	4) The Permittee shall maintain all records required by this Approval on-site for a minimum of five (5) years.
	5) The Permittee shall make records required by this Plan Approval available to MassDEP or USEPA personnel upon request.
	6) The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EU approved herein on-site.
	7) The Permittee shall maintain a record of routine maintenance activities performed on the approved EU equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	8) The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.

**Table 4 Key:**

EU# = Emission Unit Number

<b>Table 5</b>	
<b>EU#</b>	<b>Reporting Requirements</b>
EU1	1) The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a “Responsible Official” as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	2) The Permittee shall notify the Northeast Regional Office of MassDEP, BWP Permit Chief by email at <a href="mailto:NERO.air@massmail.state.ma.us">NERO.air@massmail.state.ma.us</a> or FAX at 978-694-3499, as soon as possible, but no later than one (1) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to Permit Chief at MassDEP within three (3) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	3) The Permittee shall report every three years to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.
	4) The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP’s written request.
	5) The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.
	6) The Permittee shall submit to MassDEP a final stack emission test results report, within 45 days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.

**Table 5 Key:**

EU# = Emission Unit Number

#### **4. SPECIAL TERMS AND CONDITIONS**

The Permittee is subject to, and shall comply with, the following special terms and conditions:

A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

<b>Table 6</b>	
<b>EU#</b>	<b>Special Terms and Conditions</b>
EU1	1) This Air Plan Approval, No. NE-13-016, supersedes Final Approval No. MBR-03-IND-020, issued to you by MassDEP on November 25, 2003, in its entirety. However, all plan application materials submitted as part of Final Approval No. MBR-03-IND-020 become part of Plan Approval NE-13-016.
	2) The Permittee shall comply with the following work practices: <ol style="list-style-type: none"> <li>Store all process-related waste materials, fresh and spent solvents and VOC, acetone and/or HAP-containing materials in closed containers;</li> <li>ensure that containers used for process-related waste materials, and VOC, acetone and/or HAP-containing materials are kept closed at all times except when using or removing these materials;</li> <li>minimize spills of process-related waste materials, and VOC, acetone and/or HAP-containing materials;</li> <li>convey process-related waste materials, and VOC, acetone and/or HAP-containing materials from one location to another in closed containers;</li> <li>minimize VOC, acetone and/or HAP emissions from cleaning, storage, and conveying operations;</li> <li>store and dispose of all VOC, acetone and/or HAP-containing process-related waste materials, or VOC, acetone and/or HAP-containing materials in non-absorbent containers that shall be kept closed except when placing materials in or removing materials from the container.</li> <li>All rags used in conjunction with any cleaning or spill cleanup activities shall be placed in tightly covered containers when not in use and shall be collected for proper recycling or disposal.</li> </ol>

**Table 6 Key:**

EU# = Emission Unit Number

- B. The Permittee shall install and maintain all exhaust stacks, as required in Table 7, on Emission Unit No. 1 that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as “shanty caps” and “egg beaters.” The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7 below, for the Emission Unit No. 1 that is regulated by this Plan Approval:

Table 7 Emission Unit No. 1					
Building Number	Exhaust Fan Number	Stack Height Above Ground (feet)	Stack Inside Exit Dimensions (inches)	Stack Gas Exit Velocity (feet per second)	Stack Gas Exit Temperature Range (°F)
608	AHU-1 through AHU-6	157	50	51	70
613	AHU-7 through AHU-11	141	36	59	70
613	AHU-12, AHU-13	141	34	69	70
608	LEF-1, LEF-2	152	16	50	70
613	LEF-3, LEF-4	136	16	50	70
608	LEF-5	152	15	51	70
613	LEF-6	136	21	48	70
613	LEF-7	136	8	48	70
254 Mass. Ave.	Rooftop Units 1 through 12	146	36	110 to 140	70

**Table 7 Key:**  
AHU – air handling unit  
LEF – lab exhaust fan  
°F = Degree Fahrenheit

## 5. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.

- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a pretest protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.
- K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

## **6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT**

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain “Fail-Safe Provisions,” which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

## **7. APPEAL PROCESS**

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Enclosed is a stamped approved copy of the application submittal.

Should you have any questions concerning this Plan Approval, please contact Joseph Su by telephone at 978-694-3200, or in writing at the letterhead address.

Very truly yours,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

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Joseph Su  
Environmental Engineer  
Bureau of Waste Prevention

James E. Belsky  
Permit Chief  
Bureau of Waste Prevention

cc: Board of Health, Cambridge, MA  
Fire Headquarters, Cambridge, MA  
DEP, Boston, Yi Tian (e-copy)  
DEP, NERO - M. Persky